IN THE UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF OHIO
EASTERN DIVISION

PIERRE HODGINS,	)	CASE NO. 1:02CV1454
	)	
Plaintiff,	)	JUDGE ANN ALDRICH
	)	MAG. JUDGE VECCHIARELLI
v.	)	
	)	
CARLISLE ENGINEERED PRODUCTS, INC., et al.,	)	**MOTION TO EXCLUDE THE EXPERT TESTIMONY OF PLAINTIFF'S TOXICOLOGIST PETER THORNE**
	)	
Defendants.	)	
	)	

Defendants hereby move this Honorable Court for an order excluding from trial the report and testimony of Peter Thorne, whom Plaintiff has identified as an expert in the field of toxicology.

Dr. Thorne's testimony is inadmissible under Federal Rule of Evidence 702 because: (1) it is not sufficiently related to the circumstances of this case to satisfy the "fit" requirement in Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, (1993); (2) it is not derived from scientific methodology acceptable in the field of toxicology and therefore does not meet the Daubert standard of scientific reliability. In addition, the proposed testimony is inadmissible under Federal Rule of Evidence 403 because the risks of prejudice, confusion, and waste of time outweigh its probative value.

Under the Federal Rules of Evidence and considering both the context of Dr. Thorne's Expert Report ("Report"; attached as Exhibit A) and Dr. Thorne's Deposition Testimony ("Thorne Dep."[1]), Dr. Thorne provides no reliable, relevant expert testimony which will assist

[1] Dr. Thorne's Deposition Transcript is being filed separately with the Court.

the jury. His proposed testimony fails to meet fundamental requirements for admissibility and should be excluded.

A Memorandum in support of this Motion is attached for the Court's consideration.

Respectfully submitted,

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MEMORANDUM IN SUPPORT

LAW AND ARGUMENT

"All substances are poisons; there is none which is not a poison.
The right dose differentiates a poison from a remedy."

Paracelsus (1493-1541)[2]

I. INTRODUCTION

Plaintiffs will likely seek to present the Report and testimony of Peter Thorne, M.S., Ph.D., in support of the assertion that certain chemicals allegedly used and/or released by the Carlisle facility constitute a human health risk to Plaintiffs. Dr. Thorne's Report is expressly limited to discussing the toxic properties of various chemicals in the abstract and does not even purport to address issues of dosage and exposure that go hand in hand with determining toxicity in a specific context. Report at 2. Dr. Thorne's opinion is so narrowly construed that it cannot meet the standard for reliability and relevance in Federal Rule of Evidence 702 as announced in Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 589 (1993). Because of the overwhelming generality of the Report and expected testimony, it cannot satisfy the "fit" requirement/relevance prong of Rule 702 as announced in Daubert or pass the balancing test in Federal Rule of Evidence 403. Furthermore, Dr. Thorne's testimony does not satisfy the reliability prong of Rule 702 because his methodology does not comport with the scientific standards applicable to toxicologists.

[2] Parcelsus was a German/Swiss/Austrian chemist and philosopher in the sixteenth century. See CASARETT & DOULL'S TOXICOLOGY: THE BASIC SCIENCE OF POISONS ("TOXICOLOGY: THE BASIC SCIENCE OF POISONS") 13 (Curtis D. Klaassen ed., 6th ed. 2001).

II. DISCUSSION

A. Federal Rule of Evidence 104(a): The District Court's "Gatekeeping" Role

It is the trial judge's preliminary duty to act as a gatekeeper in determining the admissibility of expert testimony. Fed. R. Evid. 104(a); Daubert, 509 U.S. 579; Nelson v. Tennessee Gas Pipeline Co., 243 F. 3d 244, 250 (6th Cir. 2001). "Faced with a proffer of expert scientific testimony, then, the trial judge must determine at the outset, pursuant to Rule 104(a), whether the expert is proposing to testify to (1) scientific knowledge that (2) will assist the trier of fact to understand or determine a fact in issue." Daubert, 509 U.S. at 592; Mike's Train House, Inc. v. Lionel, L.L.C., 472 F.3d 398, 407 (6th Cir. 2006) (holding district court abused discretion by admitting expert testimony without fully evaluating reliability).[3] As this authority demonstrates, it is simple error for the district court to abdicate its obligation to exercise "some degree of regulation of the subjects and theories about which an expert may testify." Daubert, 509 U.S. at 589; Mike's Train House, Inc., 472 F.3d at 407.

B. Dr. Thorne's Proposed Testimony on the Toxicity of Various Chemicals Must Be Excluded Under Federal Rule of Evidence 702.

Dr. Thorne's testimony fails to meet the necessary preconditions for admissibility of expert scientific evidence. The admission of such evidence is governed in large part by Rule 702 of the Federal Rules of Evidence which states:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

[3] See also Smelser v. Norfolk S. Ry. Co., 105 F.3d 299 (6th Cir. 1997), abrogated on other grounds by Gen. Elec. Co. v. Joiner, 522 U.S. 136 (1997).

Fed. R. Evid. 702. The overarching subject of a Rule 702 inquiry "is the scientific validity — and thus the evidentiary relevance and reliability — of the principles that underlie a proposed submission." Daubert, 509 U.S. at 594-95. To be admissible, the proposed expert testimony must (i) constitute "scientific knowledge," i.e., be derived from the scientific method, and (ii) "assist the trier of fact to understand the evidence or to determine a fact in issue," i.e., fit the facts before the Court. Id. at 590. Plaintiff, as the proponent of Dr. Thorne's testimony, has the burden of showing by a preponderance of the evidence that both prongs of Daubert are satisfied. See Indiana Ins. Co. v. Gen. Elec. Co., 326 F. Supp. 2d 844, 847 (N.D. Ohio 2004) (citing Daubert, 509 U.S. at 592 n. 10).

1. "The Dose Makes the Poison" – Daubert Relevance and Dr. Thorne's Failure to "Fit" His Testimony to the Facts of this Case.

Turning first to the second prong of the Daubert test – i.e., a connection between the testimony and the facts of the matter at hand – Dr. Thorne's testimony is inadmissible because it is not specifically relevant to the circumstances of this case.

i. The "Fit" Requirement in Rule 702.

Rule 702 requires Dr. Thorne's testimony to "assist the trier of fact to understand the evidence or determine a fact in issue." Fed. R. Evid. 702. This condition relates primarily to the testimony's relevance and has been described as "one of 'fit'." See Daubert, 509 U.S. at 591. Expert testimony is relevant only if the expert's reasoning and methodology can properly be applied to the facts at issue. United States v. Smithers, 212 F.3d 306, 315 (6th Cir. 2000).[4] A valid scientific connection between the testimony offered and the subject inquiry is **required as a precondition** to admission. Id.[5] Dr. Thorne's testimony does not address the fundamental

[4] See also In re Meridia Prods. Liab. Litig., 328 F. Supp. 2d 791, 803 (N.D. Ohio 2004).
[5] This issue of fit, therefore, is not an issue for the trier-of-fact.

relationship between toxicity and dosage/exposure. Thus, by definition, the testimony does not establish any connection between the toxic properties of certain chemicals and the Carlisle facility and fails to satisfy this necessary precondition.

ii. Dosage and Exposure are Essential to Assessing Toxicity

"[T]he dose makes the poison."[6] This is the central tenet of toxicology; it succinctly expresses the principle that any assessment of toxicity must include an evaluation of the concentration and level of exposure at issue.

> [That is,] toxic effects in a biological system are not produced by a chemical agent **unless** that agent or its metabolic breakdown (biotransformation) products reach appropriate sites in the body at a concentration and for a length of time sufficient to produce the toxic manifestation.

TOXICOLOGY: THE BASIC SCIENCE OF POISONS at 13 (emphasis added). It is well-established, therefore, that to properly characterize the potential hazard presented by a chemical agent, a toxicologist must determine not only the potential effect of the chemical agent, but also the dose or concentration required to produce that effect, the existing and potential exposure situations, and the susceptibility of potential recipients. Id.[7] In other words, dosage and exposure are fundamental to any assessment of toxicity. In fact, even water is toxic at sufficiently high doses, as demonstrated by the recent nationally-publicized death of a woman due to *hyponatremia*, or "water intoxication."[8]

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[6] Bernard D. Goldstein, Reference Guide on Toxicology, in REFERENCE MANUAL ON SCIENTIFIC EVIDENCE, at 403 (2d. Ed. 2000) ("REFERENCE MANUAL"). See also TOXICOLOGY: THE BASIC SCIENCE OF POISONS at 13.
[7] See also, e.g., id. at 84; REFERENCE MANUAL at 403.
[8] See National Briefing: West: Radio Show Pulled After Contest Death, N.Y. Times, Jan. 17, 2007, available at http://query.nytimes.com/gst/fullpage.html?res=9F03EFDE1130F934A25752C0A9619C8B63; see also supra, note 1; REFERENCE MANUAL at 403.

iii. Dr. Thorne Did Not Investigate Dosage or Exposure.

It is undisputed that Dr. Thorne never undertook an *exposure assessment* that would have provided him with necessary information regarding dosage and exposure. As a consequence, Dr. Thorne has no way to connect his opinion on the toxic properties of the chemicals identified in his Report to the actual sites at issue in this case. See, e.g., Nelson v. Tennessee Gas Pipeline Co., No. 95-1112, 1998 WL 1297690, at *7 (W.D. Tenn. 1998)[9] (excluding expert testimony where expert had no evidence of actual exposure), aff'd by Nelson v. Tennessee Gas Pipeline Co., 243 F. 3d 244 (6th Cir. 2001).[10]

a. *Dr. Thorne's Report Confirms that He Did Not Investigate Dosage or Exposure.*

The exceedingly narrow purpose of Dr. Thorne's Report is expressed in the second paragraph of the Report:

> The purpose of this report is to summarize the toxic properties of certain chemicals used by and/or released from the Carlisle facility. The facts and opinions about waste handling, storage, disposal practices, fate, and effects of chemicals used by and/or released from the Carlisle facility are expressed in reports submitted by Bennett & Williams Environmental Consultants and Carpenter Environmental Associates, Inc.

Report at 2. The text of the Report adheres to this limited purpose, simply summarizing the toxic properties of eighteen compounds or groups of compounds and seven metals. Id. at 2-9. Thus, Dr. Thorne himself affirms that he did not investigate the concentration or potential for exposure.

[9] This unpublished opinion is attached to this Motion as Exhibit B.

[10] See also Turpin v. Merrell Dow Pharms., Inc., 959 F.2d 1349, 1360 (6th Cir.1992) (finding failure to indicate dose used in studies left analytical gap), cert. denied, 506 U.S. 826 (1992); Grimes v. Hoffmann-LaRoche, Inc., 907 F. Supp. 33, 38 (D.N.H. 1995) (finding expert conclusions irrelevant where no basis for exposure concentration was presented); Rogers v. Ford Motor Co., 952 F. Supp. 606 (N.D. Ind. 1997) (finding lack of "fit" because expert failed to relate general theory to specific factual situation); Pomella v. Regency Coach Lines, Ltd., 899 F. Supp. 335 (E.D. Mich. 1995) (finding lack of "fit" where expert based opinion on textbook estimate not connected to the circumstances of the case).

Notably, the discussion of each chemical does **not** mention any of the following:

(1) the amount of the chemical allegedly present at or around the Carlisle facility;
(2) the extent to which harmful exposure to the chemical occurred at or around the Carlisle facility;
(3) the dosage and exposure necessary to manifest the toxic properties of the chemical in humans.

In fact, the Report barely references Carlisle at all, only mentioning that the chemicals listed are "used by and/or released from the Carlisle facility" and that some suppliers notified Carlisle of the toxicity of the chemicals they supplied. Id. at 2, 6. Therefore, the scope of the Report is truly limited to an abstract recitation of the potentially toxic properties of various chemicals.

b. *Dr. Thorne's Deposition Testimony Confirms that He Did Not Investigate Dosage or Exposure.*

Furthermore, Dr. Thorne confirmed the limited scope of the Report at his deposition:

> Q. Does your expert report express any opinion as to whether any person has, in fact, been exposed to any toxic substance from the plant located at Carlisle Engineered Products facility?
>
> A. [M]y role in this and what I provided an expert opinion on was the nature of the toxic properties of those compounds. And it's my understanding that there are other experts that were retained to provide information on hydro-geology and on pathways and transport from the facility. . . . [S]o that was not what I was asked to provide an opinion on.

Thorne Dep. at 40. In response to questions regarding whether his Report addressed the potential for exposure to the chemicals he discussed, Dr. Thorne ultimately admitted that the Report did not address exposure to toxins explicitly, but insisted that the potential for exposure was implicit in the fact that he evaluated chemicals that may have been present at the Carlisle facility. Id. at 57. This further proves that the essence and purpose of the Report is simply to state that the chemicals listed are *potentially* toxic at an unspecified dosage and exposure. Therefore, his testimony fails the relevance prong of Daubert and should be excluded.

iv. Dr. Thorne's Testimony Should Also Be Excluded Under Rule 403.

Similarly, the lack of any connection between the toxic properties of certain chemicals and the presence of chemicals – in unknown concentrations and exposure patterns – triggers exclusion under the balancing test in Federal Rule of Evidence 403. Fed. R. Evid. 403; Daubert, 509 U.S. at 595.[11] Even if proffered expert testimony satisfies Rule 702, it is inadmissible under Rule 403. Id. In fact, the trial judge should be particularly wary of the risks identified in Rule 403 in the expert testimony context because experts have a strong influence on the jury simply by virtue of their "expert" status. Smithers, 212 F.3d at 329. Thus, as the Supreme Court noted in Daubert, "the judge in weighing the possible prejudice against probative force under Rule 403 . . . exercises more control over experts than over lay witnesses." Daubert, 509 U.S. at 595 (omitting internal quotations and citations).

The probative worth of Dr. Thorne's testimony is negligible; it is narrowly confined to the undisputed and unscientific conclusion that certain chemicals are potentially toxic, **assuming** sufficient dosage and exposure, with no evidence of on-site dosage or exposure whatsoever. Admitting Dr. Thorne's testimony, on the other hand, will waste time on a tangential issue well within the jury's comprehension, cause confusion by emphasizing toxic properties without addressing the central tenets of toxicology (i.e., dosage and exposure level), mislead the jury into believing that toxicity can be evaluated independent of dosage and exposure, and unfairly prejudice Carlisle. It is therefore necessary to exclude Dr. Thorne's testimony under Rule 403 for essentially the same reasons it is inadmissible under the relevance prong of Daubert.

[11] See also United States v. Thomas, 167 F. 3d 299, 308 (6th Cir. 1999).

2. Toxicology Methodology – Daubert Reliability and Dr. Thorne's Failure to Adhere to the Scientific Standards of Toxicological Investigation.

Dr. Thorne's failure to conduct any inquiry into the actual presence of the chemicals he discusses does not comport with the scientific method generally, and, in particular, the methodology of toxicologists.[12] Under the reliability prong of the Daubert test, the District Court's task is to determine whether the reasoning or methodology underlying the expert testimony is valid. Asad v. Cont'l Airlines, Inc., 314 F. Supp. 2d 726, 731 (N.D. Ohio 2004) (quoting Daubert, 509 U.S. at 591). The essence of reliability in this context is trustworthiness; the term "scientific knowledge" in Rule 702 indicates a "grounding in the methods and procedures of science" and connotes "more than subjective belief or unsupported speculation." Daubert, 509 U.S. at 590. An expert's testimony is trustworthy if it has a "reliable basis in the knowledge and expertise of [the relevant] discipline." Kumho Tire Co., Ltd. v. Carmichael, 526 U.S. 137, 149 (1999) (omitting internal quotations).

Plaintiff will present Dr. Thorne's testimony in support of the assertion that contaminants released from the Carlisle facility create a human health risk on the adjacent property. To have that testimony admitted into evidence, Plaintiff must demonstrate that the risk assessment

[12] See, e.g., Downs v. Perstorp Components, Inc., 126 F. Supp. 2d 1090, 1124 (E.D. Tenn. 1999) (finding that expert "ignored many of the accepted methods of toxicology" when he did not know dose plaintiff received or plaintiff's exposure); Cartwright v. Home Depot, USA, 936 F. Supp. 900, 906 (M.D. Fla. 1996) ("Comparison of the known or estimated exposure to established reactive dose levels is the **cornerstone of toxicology**.") (emphasis added). See also TOXICOLOGY: THE BASIC SCIENCE OF POISONS at 96 (noting that "hazard does not occur in the absence of exposure"); National Research Council, SCIENCE AND JUDGMENT IN RISK ASSESSMENT (1994) (App. L, at 595) (stating "the minimum data need[ed] include[s] measured or estimated concentrations at the point of human contact for a specified duration").

analysis undertaken by Dr. Thorne comports with risk assessment methodologies used by toxicologists generally.[13] That plaintiffs cannot do.

i. General Risk Assessment Principles.

Risk assessment is the process of characterizing the potential adverse effects of human exposures to chemical agents. Fundamental to an understanding of the elements necessary to any risk assessment is the central tenet of toxicology discussed above — "the dose makes the poison."[14] Therefore, a toxicologist must evaluate the dose necessary to produce an adverse effect and the potential for exposure to the chemical. See TOXICOLOGY: THE BASIC SCIENCE OF POISONS at 13-14.

Accepted risk assessment procedures are designed to obtain just that information. As indicated by the very source relied upon by Dr. Thorne, a proper risk assessment consists of the following steps:[15]

- *Hazard Identification*. Hazard identification is the step in which the adverse effects of the chemical agent are determined generally.[16]
- *Dose-Response Assessment*. Dose-response assessment considers the quantitative nature of the relationship between the dose received by the subject and the biological response.[17]
- *Exposure Assessment*. Evidence of exposure in a manner that can result in absorption in the body is essential to determining the effects of harmful substances.[18] And,

[13] See Wintz By and Through Wintz v. Northrop Corp., 110 F.3d 508, 513-14 (7th Cir. 1997) (referring, for example, to the REFERENCE MANUAL when examining admissibility of toxicologist's testimony); Mancuso v. Consol. Edison Co., 967 F. Supp. 1437, 1446 (S.D.N.Y. 1997) (toxicology).
[14] REFERENCE MANUAL at 403. See also TOXICOLOGY: THE BASIC SCIENCE OF POISONS at 13. Notably, Dr. Thorne relied upon this book to reach is conclusions. See Report at 10. In fact, Dr. Thorne is one of the contributing authors of the book. See TOXICOLOGY: THE BASIC SCIENCE OF POISONS at xv, 1123.
[15] TOXICOLOGY: THE BASIC SCIENCE OF POISONS at 83-84, Fig. 4-1.
[16] Id. at 84.
[17] Id. at 92-95.
[18] See, e.g., REFERENCE MANUAL at 424.

- *Risk Characterization*. This final step of the risk assessment process summarizes the information obtained from the previous steps and estimates the incidence of adverse effects in a given population.[19]

The admission of Dr. Thorne's proposed testimony depends then on whether his risk assessment methodology coincided with these steps. See, e.g., Wintz By and Through Wintz v. Northrop Corp., 110 F.3d 508 (7th Cir. 1997) (toxicology); Mancuso v. Consol. Edison Co., 967 F. Supp. 1437, 1453 (S.D.N.Y. 1997) (finding expert "failed to follow conventional toxicological methodology in making his determination").[20] The record indicates that it did not.

ii. Dr. Thorne Failed to Assess the Chemical Exposures Allegedly Present at the Carlisle Facility.

As discussed above, fundamental principles of toxicology required Dr. Thorne to assess the likely human exposure to certain compounds and metals at the Carlisle facility in order to opine about the risks they allegedly present. See, e.g., REFERENCE MANUAL at 424. "Evidence of exposure is essential in determining the effects of harmful substances. . . . [Accordingly, the] toxicologist . . . must determine if the individual was [is, or will be] exposed to the compound in a manner that can result in absorption into the body [at concentrations necessary to produce adverse effects]."[21]

The record, however, establishes that Dr. Thorne never made that determination. Dr. Thorne's Report, for example, never examines the existing or potential human exposure situations at the Carlisle facility:

- The Report never examines the ***exposure pathways*** for any of the chemical agents identified therein (i.e., the exposure medium, including air, soil, water, etc.);

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[19] Id. at 84, 91.
[20] See also, e.g., Bennett v. PRC Public Sector, Inc., 931 F. Supp. 484, 494 (ergonomics).
[21] See supra note 14 (citing inter alia TOXICOLOGY: THE BASIC SCIENCE OF POISONS at 13, 96; National Research Council, SCIENCE AND JUDGMENT IN RISK ASSESSMENT (1994) (App. L, at 595); Cartwright, 936 F. Supp. at 906 ("Comparison of the known or estimated exposure to established reactive dose levels is the **cornerstone of toxicology**.") (emphasis added).

- The Report never examines the ***exposure routes*** for any of the chemical agents identified therein (i.e., whether absorption is dermal, through ingestion, through inhalation, etc.) (acknowledged by Dr. Thorne to be important to determining a chemical's toxicity);[22]

- The Report never examines the ***exposure concentration*** (i.e., magnitude, duration, intensity, frequency) of any of the chemical agents identified therein (i.e., the concentration characteristics to which humans are or might be exposed at the facilities) (acknowledged by Dr. Thorne to be important to determining a chemical's toxicity);[23] and

- The Report never examines the ***exposed populations***, including any relevant susceptibility or resistance factors (i.e., age, pregnancy, etc.).

Instead, the Report refers only generally to the risks associated with *possible* exposure circumstances, without ever connecting those *possible* circumstances to the Carlisle facility. Report at 9.

The only step taken by Dr. Thorne indicated by the Report was an initial identification of the hazards associated *generally* with the identified chemical agents. For example, with respect to Trichloroethylene, the Report states only that:

> Trichloroethylene is a clear liquid used as a solvent for cleaning metal parts and as a solvent in glue. Drinking or breathing high levels of trichloroethylene can cause nervous system effects, liver and lung damages, abnormal heartbeat, coma, and possibly death. Rodent bioassays show that high levels of trichloroethylene cause liver, kidney, or lung cancer. Human studies with extended periods of exposure to elevated concentrations of trichloroethylene in drinking water or in workplace air have found evidence of increased cancer. The EPA has established an MCL for trichloroethylene in drinking water of 0.005 mg/L (5 ppb). The NTP has stated that trichloroethylene is Group 2A, probably carcinogenic to humans. TCE is relatively persistent in subsurface waters owing to the slow rate of biodegradation under anaerobic conditions. This degradation of TCE occurs by reductive dechlorination producing dichloroethene and vinyl chloride.

[22] Report at 9.
[23] Report at 2-9.

Report at 2. Trichloroethylene is never again specifically mentioned in the Report. Dr. Thorne never evaluates the *exposure concentrations*, existing or potential, of trichloroethylene at the Carlisle facility; he never evaluates the *exposure pathways* existing at the site; he never evaluates the *populations allegedly exposed* to trichloroethylene at the site. The same is true for ***every other specific chemical agent identified in the Report*** and ***opined upon*** by Dr. Thorne.[24]

That Dr. Thorne never engaged in the necessary *exposure assessment*, and that he conducted only *hazard identification*, is confirmed by Dr. Thorne's deposition testimony. Thorne Dep. at 40-41. In fact, when asked about actual exposure to the chemicals discussed in his report, Dr. Thorne testified the he could not perform the exposure assessment because exposure at the facility was unknown:

> Q. Does your report express any opinion as to the nature of any actual exposure to any of these substances, separately or in combination with others, that people are actually experiencing or are likely to actually experience around the Carlisle Engineered Products facility?
>
> DR. ALTMAN: Objection.
>
> A. Throughout the report, it refers to the haz- -- some of the hazardous effects that are associated with these particular compounds, adverse health effects that occur in community-exposed individuals and occupationally-exposed individuals. And because **the nature of the exposures to those living in the vicinity of the Carlisle facility aren't fully understood**, then it wouldn't be appropriate for me to try to express an opinion with regard to individuals or their exposures.
>
> Q. When you say the exposures are not – are not fully understood, could you tell me what you mean by that statement?
>
> A. Yes. There is – there is evidence that has – or there is information in other reports submitted as part of this case that suggest off site transmission via groundwater, via air, via surface water, via soil and – however, my understanding is that these have not been studied sufficiently in order to establish clearly the exposures that are occurring to those who live in the vicinity of the Carlisle facility.

[24] See Report at 2-9.

Thorne Dep. at 52-53 (emphasis added). Similarly, Dr. Thorne acknowledges that he did not attempt to determine dosage because it would "not be fruitful" to do so under the circumstances. Thorne Dep. at 51. This amounts to an admission that a toxicological risk assessment is inappropriate in this case.

3. Speculation: Dr. Thorne's Testimony Amounts to Nothing More than Speculation Regarding Toxicity.

When reviewed closely, Dr. Thorne's testimony becomes apparent for what it is: Nothing more than textbook information about the potential toxic effects of chemical agents and rank speculation unconnected to the Carlisle. For example, the Report asserts that because several of the chemical agents are known or reasonably anticipated to be carcinogens, "chronic" exposure, "overexposure," exposure in "large amounts" or "high doses," or just plain "exposure" to those chemicals will pose a significant health hazard. Report at 2-9. Dr. Thorne does not, indeed cannot, assert whether anyone at the Carlisle site is subject to any defined level of exposure for any of the chemicals discussed because, as he admits, the exposure scenario is not fully understood. Thorne Dep. at 51-52. The Report, in fact, consists almost entirely of these types of general, nonspecific observations. Yet, this is precisely the type of speculation and unsupported personal opinion prohibited by Daubert and its progeny under Rule 702.[25]

For example, in Wintz, 110 F.3d 508, plaintiffs sought to introduce expert toxicological evidence to support their claim that the chemical bromide

[25] See also Downs, 126 F. Supp. 2d at 1128 (holding neurotoxicology expert's "opinions amount to nothing more than a highly qualified expert rendering highly unscientific speculation"); Turpin, 959 F.2d 1349 (finding expert conclusion personal opinion, not science); Estate of Mitchell v. Gencorp, Inc., 968 F. Supp. 592 (D. Kan. 1997); Cartwright, 936 F. Supp. at 906 (observing that expert, without information concerning exposure, "resorted to intuition and supposition"); Thomas v. FAG Bearings Corp., 846 F. Supp. 1382 (W.D. Mo. 1994).

caused their child's birth defects. The court found that the expert's opinion was unfounded scientifically. Significantly, the expert did not know how frequently, in what quantity or in what form the plaintiff-mother was exposed to bromide; nor did the expert attempt to correlate any specific dose received with the injuries observed. As a result, the court concluded:

> [The expert's] methodology in attempting to relate the *general principles of toxicology and bromide exposure* to the facts of this case appears to have been based less on a scientific understanding of the specifics of [plaintiff-mother's] workplace exposure and the potential effects on [the child], and *more on merely a general understanding of bromide*, with only *unsupported speculation* having been used to relate the general knowledge to the facts surrounding [plaintiff-mother's] exposure.

Id. at 514 (emphasis added). The proffered toxicological evidence was therefore inadmissible.

The fact that Dr. Thorne could not perform the exposure assessment does not excuse the failure to perform a complete toxicological risk assessment or the resulting speculative nature of the proffered testimony. Instead, it underscores the point that his toxicological assessment is incomplete and thus unreliable. Dr. Thorne only performed the *hazard identification* stage of the assessment – i.e., identifying properties of certain chemicals. Without the subsequent stages of dose-response and exposure assessment, Dr. Thorne's opinion is simply unscientific speculation. See Thomas v. FAG Bearings Corp., 846 F. Supp. 1382, 1394 n.7 (W.D. Mo. 1994). The various methods for determining exposures to chemical agents are well-established; it can be evaluated by measuring actual chemical dose, by environmental modeling, or by mathematical modeling. [26] Nothing prevented Dr. Thorne from ***directly measuring*** plaintiffs' existing and potential exposures at the subject facility. Nothing prevented Dr. Thorne from conducting ***environmental monitoring*** at the subject facility. Nothing even prevented Plaintiff from conducting their own

[26] See, e.g., SCIENCE AND JUDGMENT IN RISK ASSESSMENT at 44-45; REFERENCE MANUAL at 424.

mathematical modeling for specific chemical agents from the Carlisle facility. In essence, there simply is no excuse for the speculative nature of Dr. Thorne's testimony.

The Supreme Court has made it clear: Rule 702 requires federal judges to ensure that when scientists testify in court, they adhere to the same standards of intellectual rigor that are required in their professional work. See Kumho Tire, 526 U.S. at 152.[27] Here, Dr. Thorne's testimony fails that test. Accordingly, plaintiffs are unable to establish that Dr. Thorne's methodology comported with accepted standards governing toxicological risk assessment (i.e., its "scientific validity"). Dr. Thorne's testimony and Report are therefore inadmissible.[28]

CONCLUSION

For the foregoing reasons, Defendants respectfully request this Court grant their Motion to Exclude the Testimony of Peter Thorne in its entirety.

Respectfully submitted,
/s/ Marcel C. Duhamel

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[27] See also Rosen v. Ciba-Geigy Corp., 78 F.3d 316, 318 (7th Cir. 1996), cert. denied 519 U.S. 819.
[28] See, e.g., Mancuso, 967 F. Supp. at 1453 (finding expert's proffered testimony inadmissible, in part, because expert failed to follow proper toxicological methodology); see also Cartwright, 936 F. Supp. 900 (failed to follow toxicological methodology).

CERTIFICATE OF SERVICE

I hereby certify that on this 21st day of February, 2007, a copy of the foregoing was filed electronically. Notice of this filing will be sent to all parties by operation of the Court's electronic filing system. Parties may access this filing through the Court's system.

/s/ Marcel C. Duhamel
One of the Attorneys for Defendants